REMARKS

Entry of this amendment is proper under 37 CFR §1.116, since no new claims or issues are raised and the only claim amendments incorporate the clarification into the independent claims that the semantic object has already been identified, thereby incorporating part of previous dependent claim 38 and addressing the Examiner's concern in the rejection currently of record.

Claims 1-6, 8-19, 21-31, and 33-38 are all the claims presently pending in the application.

The amendments herein, if any, are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicants also note that, notwithstanding any claim amendments herein or later during prosecution, Applicants' intent is to encompass equivalents of all claim elements.

Claims 1-6, 8, 9, 12-19, 21, 22, 25-31, 33, 34, 37, and 38 stand rejected either under 35 U.S.C. § 102(b) as anticipated by "PetroSPIRE: A multi-modal content-based retrieval system for petroleum applications" by Bergman et al., or under 35 U.S.C. §103(a) as unpatentable over the Bergman, further in view of "Comparing Texture Feature Sets for Retrieving Core Images in Petroleum Application" by Li et al. Claims 10, 11, 23, 24, 35, and 36 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bergman/Li, further in view of "A Framework for Mining Sequence Database at Multiple Abstraction Levels" by Yu.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention, as defined by, for example, independent claim 1, is directed to a method for storing a semantic object derived from geological seismic survey data. The method includes summarizing attributes of the semantic object, indexing the summary of attributes, and storing the summary of attributes and the index of the summary of attributes. The summary of attributes includes one of a slice label, a signal strength, and a coordinate of a surveyed segment.

Conventionally geological seismic survey data has been visualized to assist geologists in

tasks, such as for constructing three dimensional reservoir models. This data may be used to directly create images that may be viewed. These images may be annotated and saved. However, the amount of this seismic survey data is very large and it is very difficult to search and analyze the data in order to identify seismic regions that have geological characteristics which are interesting to geologists. Such enormous amounts of data make it very difficult for a geologist to identify features in the geology that is being visualized.

Additionally, the amount of data that is collected has so far outpaced the ability for conventional systems to store the data.

In stark contrast, the present invention provides a semantic object from geological seismic survey data and then summarizes, indexes, and stores attributes of the semantic object. In this manner, the geological seismic survey data may be analyzed much more efficiently and easily.

II. THE PRIOR ART REJECTIONS

A. The Bergman et al. reference

Regarding the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, 37 and 38, the Examiner alleges that the Bergman et al. reference teaches the claimed invention or, alternatively, renders these claims obvious if further modified by Li. Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by the Bergman et al. reference, since this reference clearly fails to summarize and index the semantic objects that are described.

As best understood from the Examiner's comments beginning on page 2 of the Office Action, the Examiner would be satisfied if the independent claims were amended to explicitly state that the semantic objects have already been identified, and, although it is believed that the previous claim wording was adequate in this regard, Applicants have accordingly amended the independent claims in an attempt to expedite prosecution.

However, Applicants again point out that it appears that the Examiner fails to recognize that, even if Bergman did demonstrate the identification of semantic objects, there is no suggestion to then summarize these semantic objects and index the summary of attributes.

That is, this primary reference is clearly the previous work of at least several of the present inventors. This reference is discussed beginning at line 12 of page 10 of the present application as one exemplary mechanism for *deriving* the semantic objects for geologic raw data. This is the same tool/method described in Bergman.

The present invention goes beyond simply finding the semantic objects that PetroSPIRE is capable of identifying from raw geologic data by summarizing attributes of these objects and then building and storing an index for the summaries, along with the summaries.

Bergman does not suggest also thereafter summarizing these semantic objects, let along developing an index of such summaries.

In the rejection, the Examiner points to Figure 4(a) of Bergman as demonstrating the step of summarizing a semantic object. However, Applicants respectfully submit that Bergman itself describes (e.g., at line 12 on page 452) Figure 4(a) as merely "... *an additional example in the definition of shale*", used to provide a revised definition of shale.

The Examiner's characterizations in the rejection indicate that the Examiner has failed to understand that Figure 3 (and, similarly, Figure 4(a)) merely shows the mechanism used by the user to define a structure of interest, as explained clearly in the first sentences of the final paragraph on page 451: "*We begin by iteratively constructing a definition for shale strata. A section of FMI image that is representative of shale is selected by outlining it with the mouse, and importing it into the query builder where it becomes a menu item available for drag-and-drop operations. Figure 3(a) shows the initial definition of shale, incorporating this image example....*"

Continuing onto page 452, Bergman then describes, at line 12: "*Figure 4(a) shows the inclusion of an additional example in the definition of shale.*" Thus, contrary to the Examiner's characterization, Figure 4(a) is merely a revision in a process of defining a query so that the user can search the database for higher levels of structure(s).

Neither Figure 3(a) nor Figure 4(a) demonstrates an example of a semantic object, as the Examiner alleges, let alone demonstrating an example of a summary of a semantic object. Rather, these figures demonstrate the method that the user uses to define a query to search the database, as clearly described in the final sentence on page 452: "*Once constructed, such a*

semantic definition can be used to search the entire archive, and the top 5 results are shown in Figure 5."

As pointed out in the next paragraph beginning on page 453: "*The final step in our example is to define a composite entity.*"

Thus, even this reference itself describes PetroSPIRE as a tool to search a database for geologically significant features by building up semantic definitions to become a search query. Higher levels of features can be searched by using lower levels of objects.

However, there is no suggestion in this reference of summarizing semantic objects that might be discovered from using this method described in PetroSPIRE, let alone summarizing such semantic objects in the manner of the claimed invention.

More specifically, the discussion related to Figure 4(a) has nothing whatsoever to do with summarizing a semantic object, since this figure is actually related to the development of a definition of a query to be used to discover objects in the database, including higher level objects such as semantic objects.

Hence, turning to the clear language of the claims, in Bergman there is no teaching or suggestion of: "A method for storing a semantic object derived from geological seismic survey data, the method comprising: receiving a semantic object; summarizing attributes of said semantic object; indexing the summary of attributes; and storing the summary of attributes and the index of the summary of attributes", as required by independent claim 1. The remaining independent claims have similar wording.

Therefore, the Bergman et al. reference does not teach or suggest each and every element of the claimed invention and the Examiner is respectfully requested to withdraw this rejection of claims 1-9, 12-22, 25-34, and 37.

B. The Bergman et al. reference in view of the Li et al. reference

Regarding the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, and 37, the Examiner alleges that the Li would have been combined with the Bergman to form the claimed invention. Applicants submit, however, that these references would not have been combined and, even if combined, the combination would not teach or suggest each and every element of

the claimed invention, since secondary reference Li fails to overcome the fundamental deficiency identified above that Bergman fails to even incorporate the feature of identifying semantic objects, let alone the capability of summarizing and indexing them.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 1-6, 8-9, 12-19, 21-22, 25-31, 33-34, 37, and 38.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-6, 8-19, 21-31, and 33-38, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0510.

Respectfully Submitted,

Frederick E. Cooperrider
Registration No. 36,769

McGinn Intellectual Property Law Group, PLLC
8321 Old Courthouse Rd., Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254

CERTIFICATION OF TRANSMISSION

I certify that I transmitted via EFS this Amendment under 37 CFR §1.116 to Examiner H. Pham on May 14, 2008.

Frederick E. Cooperrider
Reg. No. 36,769